



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,789	11/26/2003	Richard O. Glasson	CPI 3 Con	7239
26345	7590	09/14/2006	EXAMINER	
GIBBONS, DEL DEO, DOLAN, GRIFFINGER & VECCHIONE 1 RIVERFRONT PLAZA NEWARK, NJ 07102-5497			LOPEZ, FRANK D	
			ART UNIT	PAPER NUMBER
			3745	
DATE MAILED: 09/14/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/722,789	GLASSON, RICHARD O.	
	<b>Examiner</b>	<b>Art Unit</b>	
	F. Daniel Lopez	3745	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 10 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1,4,7-9 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,4,7-9,12 and 13 is/are rejected.
- 7) ☐ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/10/06</u> | 6) <input type="checkbox"/> Other: _____  |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 10, 2006 has been entered.

***Response to Amendment***

Applicant's arguments filed April 10, 2006, have been fully considered but they are not deemed to be persuasive.

Applicant's argues that there is no reason to combine Pullen with either Novak or Long, for the following reasons (the following reasons discuss Novak, but the same reasoning applies to Long):

A general relationship between fields of the prior art references is insufficient to suggest a motivation, because in order to rely on a reference, the reference must be either in the field of applicants' endeavor or, if not, reasonably pertinent to the particular problem with which applicant was concerned.

Nowak is directed to a linear positioning system utilizing a "rotary encoder" for positioning a load, such as a log for cutting; but does not mention any concern about vibration. The purpose of the "rotary displacement transducer" of Pullen is to be used in environments subject to continuous vibration. Therefore the motivation lacks support.

Furthermore, even if Novak was concerned with vibration there is no motivation to combine Pullen with Novak, since the two references are quite different. There is no suggestion to use the rotary displacement transducer of Pullen to enhance or improve the already existing rotary encoder of Novak. There is no suggestion to consider converting a translational movement of the piston of Novak to a rotational movement of the encoder of Novak, back to a translational movement in order to sense movement of the piston in a vibration environment. On the contrary, changing a translational movement to a rotational movement and back to a translational movement would be more likely to increase the complexity and therefore unreliability and inaccuracy of the system.

Applicant appears to place a high emphasis on the differences between either Novak or Long, and Pullen. Applicant insists on naming the sensor of Novak a “rotary encoder”, whereas names the sensor of Pullen a “rotary displacement transducer”. What one having ordinary skill in the art would see of the sensor (40) of Novak is a rotary input (via input shaft 120) and an electrical output (e.g. via a line connected to 42). What one having ordinary skill in the art would see of the sensor (12) of Pullen is a rotary input (via input shaft 26) and an electrical output. Therefore, the sensors of Pullen and Novak are rotary encoders or rotary transducers.

Furthermore, Novak does not say how the encoder generates electrical signals from the rotary input. Novak only describes the encoder as “The transducer is a well known commercially available encoder” (column 2 line 38-39). It would appear that Pullen is describing a commercially available encoder. And therefore, on this basis alone, the encoder of Pullen should be able to be used as the encoder of Novak.

There is a further reason for using the encoder of Pullen as the encoder of either Novak or Long. Novak deals with a saw mill. Long deals with a farm tractor pulling farm equipment. One having ordinary skill in these arts would recognize that these machines would have a lot of vibration, due to either moving the logs around and sawing them, or driving the tractor over uneven ground pulling the equipment. Since the encoder of Pullen is useful in environments with vibration, this is an additional reason for using the encoder of Pullen as the encoder of either Novak or Long.

Normally, changing a translational movement to a rotational movement and back to a translational movement would be more likely to increase the complexity and therefore unreliability and inaccuracy of the system. But one of the teachings of Pullen appears to be that changing from a rotational movement to a translational movement increases the reliability and accuracy of the system, by using a sensor that is more reliable and accurate than the sensors which directly sense rotary motion. Therefore, the teaching of Pullen overcomes the conventional wisdom of more complexity increases the unreliability and inaccuracy of a system. And therefore, the system of either Novak or Long can be improved by adding the sensor of Pullen.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

Claims 1, 4, 7-9, 12 and 13 are rejected under 35 U.S.C. § 103 as being unpatentable over Novak in view of Pullen. Novak discloses a sensor for a hydraulically actuated cylinder (12) having a piston (14), comprising a flexible connector (34) having first and second ends attached to the piston and to a rotating element (36, 38) of a converting element, respectively; wherein the converting element converts linear movement of the piston to a rotating movement of the rotating element; and a transducer (112) sensing rotary movement of the rotating element; a recoil mechanism (106) coupled to the rotating element; but does not disclose that the transducer includes a translating member in threaded communication with the rotating element, such that the rotating element converts linear movement of the piston to a linear movement of the translating member, with the transducer sensing the position of the translating member; with the translating member displaced along an axis of rotation of the rotating member and having an anti-rotational force exerted thereon; that the transducer is one of LVDT, DVRT, potentiometer, inductive transducer, capacitive transducer and a Hall-effect transducer; or that there is an anti-backlash force exerted along the longitudinal axis of the translating member.

Pullen teaches, for a transducer sensing rotary movement of a rotating element (24, 26); that the rotating element is in threaded communication with a translating member (40, 60) such that rotary movement of the rotating element is converted to a linear movement of the translating member, with the translating member displaced along an axis of rotation of the rotating member and having an anti-rotational force exerted thereon (by 60); and with an LVDT (62, e.g. column 2 line 46-48), or any convenient kind of linear displacement transducer (e.g. column 3 line 21-26) sensing the position of the translating member, for the purpose of providing a transducer which can be used in environments subject to continuous vibration (e.g. column 1 line 4-17).

Since the actuator of Novak can be used in environments with continuous vibration, and since the teaching of Pullen concerns position sensors used in environments with continuous vibration; the purpose disclosed by Pullen would have been recognized in the pertinent art of Novak. It would have been obvious at the time the invention was made to one having ordinary skill in the art to replace the transducer of Novak with a transducer which includes a translating member in threaded communication with the rotating element, such that rotary movement of the rotating element is converted to a linear movement of the translating member, with the translating member displaced along an axis of rotation of the rotating member; and with an LVDT, or any convenient kind of linear displacement transducer, sensing the position of the translating member, as taught by Pullen, for the purpose of providing a transducer which can be used in environments subject to continuous vibration.

Official notice is taken, for a linear to rotary device including a rotating element having screw threads driving a translating member, that an anti-backlash force is exerted along a longitudinal axis of the translating member, for the purpose of positioning the translating member at a same position, for the same position of the rotating element, no matter which direction the rotating element is rotated. It would have been obvious at the time the invention was made to one having ordinary skill in the art to exert an anti-backlash force along a longitudinal axis of the translating member of Nowak, for the purpose of positioning the translating member at a same position, for the same position of the rotating element, no matter which direction the rotating element is rotated.

Claims 1, 4, 7-9, 12 and 13 are rejected under 35 U.S.C. § 103 as being unpatentable over Long in view of Pullen. Long discloses a sensor for a hydraulically actuated cylinder (17, 430') having a piston (19) and used in an environment (see fig 1) with continuous vibration, comprising a flexible connector (44, 417) having first and second ends attached to the piston and to a rotating element (e.g. 433) of a converting element, respectively; wherein the converting element converts linear movement of the movable element to a rotating movement of the rotating element; and a potentiometer (434) sensing rotary movement of the rotating element; and a recoil mechanism (433)

coupled to the rotating element; but does not disclose that the transducer includes a translating member in threaded communication with the rotating element, such that the rotating element converts linear movement of the movable element to a linear movement of the translating member, with the transducer sensing the position of the translating member; with the translating member displaced along an axis of rotation of the rotating member and having an anti-rotational force exerted thereon; that the transducer is one of LVDT, DVRT, potentiometer, inductive transducer, capacitive transducer and a Hall-effect transducer; or that there is an anti-backlash force exerted along the longitudinal axis of the translating member.

Pullen teaches, for a transducer sensing rotary movement of a rotating element (24, 26); that the rotating element is in threaded communication with a translating member (40, 60) such that rotary movement of the rotating element is converted to a linear movement of the translating member, with the translating member displaced along an axis of rotation of the rotating member and having an anti-rotational force exerted thereon (by 60); and with an LVDT (62, e.g. column 2 line 46-48), or any convenient kind of linear displacement transducer (e.g. column 3 line 21-26) sensing the position of the translating member, for the purpose of providing a replacement transducer, for a potentiometer, which can be used in environments subject to continuous vibration (e.g. column 1 line 4-17).

Since the actuator of Long has a potentiometer used in an environment with continuous vibration, and since the teaching of Pullen concerns potentiometers used in environments with continuous vibration; the purpose disclosed by Pullen would have been recognized in the pertinent art of Long. It would have been obvious at the time the invention was made to one having ordinary skill in the art to replace the transducer of Long with a transducer which includes a translating member in threaded communication with the rotating element, such that rotary movement of the rotating element is converted to a linear movement of the translating member, with the translating member displaced along an axis of rotation of the rotating member; and with an LVDT, or any convenient kind of linear displacement transducer, sensing the position of the translating member, as

Art Unit: 3745

taught by Pullen, for the purpose of providing a transducer which can be used in environments subject to continuous vibration.

Official notice is taken, for a linear to rotary device including a rotating element having screw threads driving a translating member, that an anti-backlash force is exerted along a longitudinal axis of the translating member, for the purpose of positioning the translating member at a same position, for the same position of the rotating element, no matter which direction the rotating element is rotated. It would have been obvious at the time the invention was made to one having ordinary skill in the art to exert an anti-backlash force along a longitudinal axis of the translating member of Long, for the purpose of positioning the translating member at a same position, for the same position of the rotating element, no matter which direction the rotating element is rotated.

### ***Conclusion***

Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

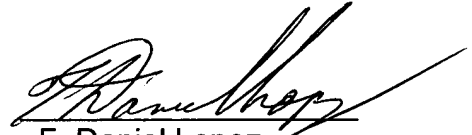
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 3745

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is 571- 272-4821. The examiner can normally be reached on Monday-Thursday from 6:15 AM -3:45 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on 571-272-4820. The fax number for this group is 571-273-8300. Any inquiry of a general nature should be directed to the Help Desk, whose telephone number is 1-800-PTO-9199.



F. Daniel Lopez  
Primary Examiner  
Art Unit 3745  
September 07, 2006